**YEAR 11 BIOLOGY**

**UNIT 1 PAST PAPER QUESTIONS**

**GASEOUS EXCHANGE**

**MULTIPLE CHOICE**

TSSM 2011

Question 11

Plants have a range of adaptations that enable them to photosynthesise more effectively.

Which of the following adaptations assist leaves to carry out photosynthesis?

I. Leaves have a mosaic pattern on their surface which maximises exposure to sunlight

II. Thickened leaves obtain more carbon dioxide than thinner leaves

III. Xylem transports water towards leaves

IV. Large numbers of chloroplasts are located in mesophyll cells

A. I and II

B. II and III

C. III and IV

D. II, III and IV

Question 12

Explain why the rate of photosynthesis decreases in the middle of a hot sunny day.

A. When leaves absorb too much sunlight chloroplasts become damaged.

B. Stomata close to prevent water loss by the process of transpiration.

C. Heat causes leaves to wilt decreasing their surface area.

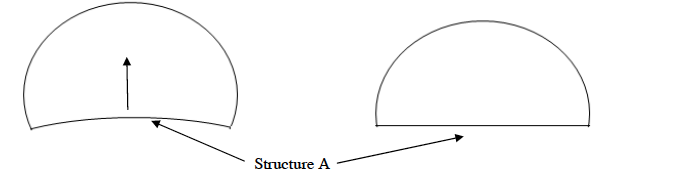
D. Carbon dioxide molecules have more kinetic energy when temperature is increased.

**SHORT ANSWER**

TSSM 2012

Question 5

The diagram below represents the thoracic cavity at two different stages during breathing.



a. Identify structure A which is located at the base of the thoracic cavity.

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1 mark

b. Structure A is moving in the direction indicated in diagram 1. Is this diagram showing

inspiration or expiration? Provide a reason to justify your answer.

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2 marks

c. Two students are discussing cellular respiration and photosynthesis. Student 1 states that the two reactions are exactly the opposite of each other. Student 2 disagrees with this statement.

Based upon the processes that occur in these reactions, identify which student is most correct and provide a reason to support your answer.

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2 marks

Insight 2011

Question 6

A stomatal opening (stoma) is a pore, the size of which is determined by the movement of water in and out of cells which surround it. Stomata are usually open during daylight hours and closed in periods of darkness.

**6b. i.** What is the name given to the cells that surround a stoma?

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**6b. ii.** Explain the benefit, to a plant, of stomata that open during the day and close at night.

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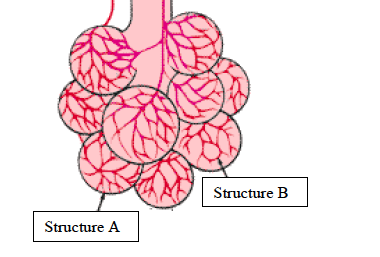
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2 marks

TSSM 2011

Question 2

The diagram below shows the cross section of an area in a human lung.



a. Identify the structures labelled A and B on the diagram.

Structure A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Structure B \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2 marks

b. Identify the process which allows the exchange of oxygen to take place across the gas exchange surface.

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c. List two adaptations of the respiratory surface shown in the diagram that increases the efficiency of gas exchange across the surface.

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Select one of these adaptations and explain how this adaptation increases the efficiency of gas exchange across the respiratory surface.

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1 mark

e. The table below shows the content various gases in atmospheric air compared to exhaled air.

Atmospheric air (by %) Exhaled air (by %)

Oxygen gas 21% 16%

Carbon dioxide gas 0.06% 4%

Nitrogen gas 78% 78%

Explain why there is an increase in the percentage of carbon dioxide and a decrease in the percentage of oxygen in the exhaled air compared to the atmospheric air.

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2 marks

Carbon monoxide is found in comparatively high concentrations in car exhausts and cigarette smoke. Oxygen binds to haemoglobin molecules found in red blood cells, however, carbon monoxide is able to bind to haemoglobin even more strongly than oxygen can.

Predict the effect that cigarette smoking would have on cellular respiration. Explain your answer.

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Total 9 marks